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<110> The Government of the United States of America...

<120> Synthetic Peptides Immunoreactive With Hepatitis A
Virus Antibodies

<130> 03063_0461WP

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<150> 60/144,412

<151> 1999-07-15

<160> 94

<170> PatentIn Ver. 2.0

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WO 01/05824

PCT/US00/19267

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VP2 and VP4 Peptides

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Ile Gln Ser Val Gln

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Ser Ser Val His Gln

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VP2 and VP4 Peptides

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Pro Gly Ser Lys Gln

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Gly Glu Lys Phe Gln

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VP2 and VP4 Peptides

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Asp Lys Pro Gly Ser Lys Lys Thr Gln Gly Glu Lys Phe Phe Leu Ile

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PCT/US00/19267

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Tyr Ala Arg Phe Gln

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VP2 and VP4 Peptides

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Pro Gly Asp Gln

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VP2 and VP4 Peptides

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Trp Ser Glu Leu Gln

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VP2 and VP4 Peptides

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Arg Phe Thr Asp Gln

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VP3 Peptide

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Trp Thr Ser Ile Gln

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Leu Ala Ala Gln

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VP3 Peptide

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VP3 Peptide

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Tyr His Ser Gly Gln

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VP3 Peptide

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Phe Cys Phe Val Gln

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VP3 Peptide

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Gly Asn Glu Leu Gln

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VP3 Peptide

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Ile Thr Gly Val Gln

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Glu Cys Phe Ala Gln

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VP1 Peptide

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Thr Thr Val Ser Thr Glu Gln Asn Val Pro Asp Pro Gln Val Gly Ile

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Thr Thr Met Lys Gln

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VP1 Peptide

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Lys Gly Lys Ala Gln

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Ile Thr Thr Ile Gln

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VP1 Peptide

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Phe Pro Glu Leu Gln

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VP1 Peptide

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Glu Asp Pro Val Leu Ala Lys Lys Val Pro Glu Thr Phe Pro Glu Leu

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Lys Pro Gly Glu Gln

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Arg His Thr Ser Gln

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Ser Ile Tyr Lys Gln

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VP1 Peptide

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22

Thr Phe Thr Phe Gln

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VP1 Peptide

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Phe Pro Ile Thr Gln

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Ala Leu Ser Ile Gln

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VP1 Peptide

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24

Phe Pro Arg Ala Gln

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VP1 Peptide

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Ser Asn Ala Met Gln

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VP1 Peptide

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Ile Ala Ala Gly Gln

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VP1 Peptide

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Met Ser Arg Ile Ala Ala Gly Asp Leu Glu Ser Ser Val Asp Asp Pro

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Arg Ser Glu Glu Gln

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VP1 Peptide

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Lys Arg Phe Glu Gln

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Glu Cys Arg Lys Gln

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P2A Peptide

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WO 01/05824

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Gly Lys Gln Arg Gln

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P2A Peptide

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P2A Peptide

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Pro Pro Arg Lys Gln

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P2A Peptide

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Val Leu Pro Pro Pro Arg Lys Met Lys Gly Leu Phe Ser Gln Ala Lys

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P2A Peptide

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Met Lys Phe Ser Gln

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WO 01/05824

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P2A Peptide

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P2A Peptide

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P2A Peptide

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Ile Lys Glu Gln

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Pro Pro Arg Lys Met Lys Gly Leu Phe Gln

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P2A Peptide

<400> 48

Trp Leu Asn Pro Lys Lys Ile Asn Leu Ala Asp Arg Met Leu Gly Leu

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Ser Gly Val Gln Glu Ile Lys Glu Gln

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Val Ile Gln Gln Leu Asn Gln Asp Glu His Ser His Ile Ile Gly Leu

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Leu Arg Val Met Gln

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WO 01/05824

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P2C Peptide

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Asn Ile Leu Lys Asp Asn Gln Gln Lys Ile Glu Lys Ala Ile Glu Glu

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Ala Asp Glu Phe Gln

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P2C Peptide

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Leu Gly Ser Ile Asn Gln Ala Met Val Thr Arg Cys Glu Pro Val Val

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Cys Tyr Leu Tyr⁻Gln

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P2C Peptide

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Arg Cys Glu Pro Val Val Cys Tyr Leu Tyr Gly Lys Arg Gly Gly Gly

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Lys Ser Leu Thr Gln

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37

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P2C Peptide

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Val Cys Ile Ile Gln

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P2C Peptide

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Val Ser Gly Cys Pro Met Arg Leu Asn Met Ala Ser Leu Glu Glu Lys

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Gly Arg His Phe Gln

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P2C Peptide

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WO 01/05824

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39

Phe Ile Ile Ala Gln

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P2C Peptide

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Leu His Phe Lys Gln

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P2C Peptide

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Val Lys Glu Ala Ile Asp Arg Arg Leu His Phe Lys Val Glu Val Lys

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Pro Ala Ser Phe Gln

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P2C Peptide

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Val Lys Pro Ala Ser Phe Phe Lys Asn Pro His Asn Asp Met Leu Asn

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WO 01/05824

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41

Val Asn Leu Ala Gln

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P2C Peptide

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Asp Ala Ile Lys Gln

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P2C Peptide

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Ile Met Asp Gly Gln

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P2C Peptide

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WO 01/05824

PCT/US00/19267

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Leu Trp Ser Gln

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P3A Peptide

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Phe Gln Ser Phe Gln

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WO 01/05824

PCT/US00/19267

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P3A Peptide

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Asp Ser Ala Val Ala Glu Phe Phe Gln Ser Phe Pro Ser Gly Glu Pro

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Ser Asn Ser Lys Gln

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P3A Peptide

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Phe Gln Ser Phe Pro Ser Gly Glu Pro Ser Asn Ser Lys Leu Ser Gly

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Phe Phe Gln Ser Gln

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P3A Peptide

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Ser Ala Val Ala Glu Phe Phe Gln Ser Phe Pro Ser Gly Glu Pro Ser

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Asn Ser Lys Leu Ser Gly Phe Phe Gln

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P3B Peptide

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His Gly Val Thr Lys Pro Lys Gln Val Ile Lys Leu Asp Ala Asp Pro

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Val Glu Ser Gln

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P3C Peptide

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PCT/US00/19267

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Gly Leu Val Arg Lys Asn Leu Val Gln Phe Gly Val Gly Glu Lys Asn

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Gly Cys Val Arg Gln

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<210> 68

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic HAV

P3C Peptide

<400> 68

Asp Val Val Leu Met Lys Val Pro Thr Ile Pro Lys Phe Arg Asp Ile

1

5

10

15

Thr Gln His Phe Gln

20

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48

<210> 69

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic HAV

P3C Peptide

<400> 69

Met Glu Glu Lys Ala Thr Tyr Val His Lys Lys Asn Asp Gly Thr Thr

1

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10

15

Val Asp Leu Thr Gln

20

<210> 70

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic HAV

P3C Peptide

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49

<400> 70

Lys Asn Asp Gly Thr Thr Val Asp Leu Thr Val Asp Gln Ala Trp Arg

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15

Gly Lys Gly Glu Gln

20

<210> 71

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic HAV

P3C Peptide

<400> 71

Arg Gly Lys Gly Glu Gly Leu Pro Gly Met Cys Gly Gly Ala Leu Val

1

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10

15

Ser Ser Asn Gln

20

WO 01/05824

PCT/US00/19267

50

<210> 72

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic HAV

P3C Peptide

<400> 72

Val Ala Lys Leu Val Thr Gln Glu Met Phe Gln Asn Ile Asp Lys Lys

1

5

10

15

Ile Glu Ser Gln

20

<210> 73

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic HAV

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51

P3D Peptide

<400> 73

Arg Ile Met Lys Val Glu Phe Thr Gln Cys Ser Met Asn Val Val Ser

1

5

10

15

Lys Thr Leu Phe Gln

20

<210> 74

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic HAV

P3D Peptide

<400> 74

Phe Thr Gln Cys Ser Met Asn Val Val Ser Lys Thr Leu Phe Arg Lys

1

5

10

15

Ser Pro Ile Tyr Gln

20

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PCT/US00/19267

52

<210> 75

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic HAV

P3D Peptide

<400> 75

Met Leu Ser Lys Tyr Ser Leu Pro Ile Val Glu Glu Pro Glu Asp Tyr

1

5

10

15

Lys Glu Ala Ser Gln

20

<210> 76

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

WO 01/05824

PCT/US00/19267

53

<223> Description of Artificial Sequence:Synthetic HAV

P3D Peptide

<400> 76

Leu Asp Glu Asn Gly Leu Leu Leu Gly Val His Pro Arg Leu Ala Gln

1

5

10

15

Arg Ile Leu Phe Gln

20

<210> 77

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic HAV

P3D Peptide

<400> 77

Cys Pro Lys Asp Glu Leu Arg Pro Leu Glu Lys Val Leu Glu Ser Lys

1

5

10

15

Thr Arg Ala Ile Gln

WO 01/05824

PCT/US00/19267

54

20

<210> 78

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic HAV

P3D Peptide

<400> 78

Ser Lys Thr Arg Ala Ile Asp Ala Cys Pro Leu Asp Tyr Ser Ile Leu

1

5

10

15

Cys Arg Met Tyr Gln

20

<210> 79

<211> 21

<212> PRT

<213> Artificial Sequence

WO 01/05824

PCT/US00/19267

55

<220>

<223> Description of Artificial Sequence:Synthetic HAV

P3D Peptide

<400> 79

Arg Met Tyr Trp Gly Pro Ala Ile Ser Tyr Phe His Leu Asn Pro Gly

1

5

10

15

Phe His Thr Gly Gln

20

<210> 80

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic HAV

P3D Peptide

<400> 80

Lys Thr Met Ile Arg Phe Gly Asp Val Gly Leu Asp Leu Asp Phe Ser

1

5

10

15

WO 01/05824

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56

Ala Phe Asp Ala Gln

20

<210> 81

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic HAV

P3D Peptide

<400> 81

Asp Leu Asp Phe Ser Ala Phe Asp Ala Ser Leu Ser Pro Phe Met Ile

1

5

10

15

Arg Glu Ala Gly Gln

20

<210> 82

<211> 21

<212> PRT

<213> Artificial Sequence

WO 01/05824

PCT/US00/19267

57

<220>

<223> Description of Artificial Sequence:Synthetic HAV

P3D Peptide

<400> 82

Ile Asn Asn Val Asn Leu Tyr Tyr Val Phe Ser Lys Ile Phe Gly Lys

1 5 10 15

Ser Pro Val Phe Gln

20

<210> 83

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic HAV

P3D Peptide

<400> 83

Gly Gln Lys Ile Val Asp Glu Phe Lys Lys Leu Gly Met Thr Ala Thr

1 5 10 15

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58

Ser Ala Asp Lys Gln

20

<210> 84

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic HAV

P3D Peptide

<400> 84

Leu Gly Met Thr Ala Thr Ser Ala Asp Lys Asn Val Pro Gln Leu Lys

1

5

10

15

Pro Val Ser Glu Gln

20

<210> 85

<211> 21

<212> PRT

WO 01/05824

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59

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic HAV

P3D Peptide

<400> 85

Pro Gln Leu Lys Pro Val Ser Glu Leu Thr Phe Leu Lys Arg Ser Phe

1

5

10

15

Asn Leu Val Glu Gln

20

<210> 86

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic HAV

P3D Peptide

<400> 86

Ser Glu Lys Thr Ile Trp Ser Leu Ile Ala Trp Gln Arg Ser Asn Ala

WO 01/05824

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60

1

5

10

15

Glu Phe Glu Gln

20

<210> 87

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic HAV

P3D Peptide

<400> 87

Ser Leu Ile Ala Trp Gln Arg Ser Asn Ala Glu Phe Glu Gln Asn Leu

1

5

10

15

Glu Asn Ala Gln

20

<210> 88

<211> 21

WO 01/05824

PCT/US00/19267

61

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic HAV

P3D Peptide

<400> 88

Trp Gln Arg Ser Asn Ala Glu Phe Glu Gln Asn Leu Glu Asn Ala Gln

1

5

10

15

Trp Phe Ala Phe Gln

20

<210> 89

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic

Peptide

<400> 89

WO 01/05824

PCT/US00/19267

62

Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala

1

5

10

15

Ala Ala Ala Ala

20

<210> 90

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic

Peptide

<400> 90

Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala

1

5

10

15

Ala Ala Ala Ala Gln

20

<210> 91

WO 01/05824

PCT/US00/19267

63

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic
Peptide

<400> 91

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly

1

5

10

15

Gly Gly Gly Gly

20

<210> 92

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic
Peptide

WO 01/05824

PCT/US00/19267

64

<400> 92

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly

1

5

10

15

Gly Gly Gly Gly Gln

20

<210> 93

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic

Peptide

<400> 93

Gly Gly Gly Gly Gly Ala Ala Ala Ala Ala Gly Gly Gly Gly Gly Ala

1

5

10

15

Ala Ala Ala Ala

20

WO 01/05824

PCT/US00/19267

65

<210> 94

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 94

Gly Gly Gly Gly Gly Ala Ala Ala Ala Ala Gly Gly Gly Gly Ala

1

5

10

15

Ala Ala Ala Ala Gln

20

1